



**Transportation
Security
Administration**

JAN 12 2011

The Honorable Edward J. Markey
U.S. House of Representatives
Attention: Dr. Avenel Joseph
Washington, DC 20515

Dear Congressman Markey:

Thank you for your letter of December 6, 2010, requesting information regarding the manner in which the Transportation Security Administration (TSA) inspects, maintains, and operates full-body x-ray screening equipment used for airport security.

In 2008, the National Institute for Occupational Safety and Health (NIOSH) conducted a study to evaluate employees' exposure to radiation from TSA cabinet x-ray systems, which include the checked baggage Explosives Detection Systems (EDS) and checkpoint x-ray systems. NIOSH concluded that exposure levels were well below the Occupational Safety and Health Administration (OSHA) permissible standard.

Since then, TSA has implemented key recommendations of the NIOSH report. These recommendations include formalizing a comprehensive radiation safety program to meet OSHA and U.S. Department of Homeland Security (DHS) requirements and evaluating Transportation Security Officer radiation exposure levels at selected airports through an additional year-long dosimetry study at six airports managed by Certified Health Physicists from the U.S. Army Public Health Command (Provisional). TSA took further steps to ensure safe working conditions for our workforce by improving maintenance through more stringent maintenance contracts and using Safety Action Teams, Collateral Duty Safety Officers (CDSOs), and Employee Councils to improve health and safety communications between employees and management.

Based on the NISOH report, you had several questions regarding current full-body x-ray screening systems. We have addressed these questions below.

1a. How frequently does TSA plan to inspect the new advanced imaging full-body x-ray screening systems to ensure that the radiation emitted is within acceptable standards?

Radiation surveys are performed at installation; once every 12 months; whenever a unit is moved; after any maintenance action that affects radiation shielding, shutter mechanism, or x-ray production components; and after any incident that may have damaged the system in a way that unintended radiation emission may occur. In addition to the radiation surveys, a daily calibration is conducted prior to operation to ensure proper operation.

In addition to the inspections, the operator cannot adjust the scan speed or any other parameters that could alter the dose per screening. There are automated sensors that monitor

the system parameters critical to maintaining the dose per screening within specification. If, for example, the speed in either direction does not remain within specifications, safety systems will automatically stop x-ray production.

1b. What does this inspection entail? Who is responsible for performing these inspections?

The vendor has set procedures to validate compliance to the Government contract and to the American National Standards Institute (ANSI) standard. Vendor-trained and certified technicians perform the inspections/surveys. Measurements and parameters are recorded and maintained on file with the vendor. All completed forms are readily available to the TSA.

TSA partnered with Certified Health Physicists at the U.S. Army Public Health Command (Provisional) to conduct independent and random radiation surveys. The physicists check the indicators, controls, and labeling to ensure proper procedures are followed. Physicists are also gathering area radiation dose data by mounting dosimeters within the inspection zone, that area only occupied by the individual undergoing the screening and delineated by the yellow bordered floor mat on select systems.

1c. Please provide details of the inspection protocol used to check radiation levels in and around the advanced imaging x-ray screening system.

The manufacturer of the technology has an established work instruction for radiation emission of their Advanced Imaging Technology (AIT) system, which outlines the steps to ensure compliance with all applicable regulations and standards. The work instruction provides guidance, defines responsibilities, establishes administrative exposure limitations, and provides specific directions for measuring and recording radiation dose to the scanned subject, radiation leakage, and validation of the inspection zone boundary.

2a. Please describe the maintenance and enforcement strategies that TSA has in place to ensure that all screening systems and protocols being used remain in compliance with the general-use dose-per screening limit of 25 μ rem?

Per the vendor contract, there is a 2-year vendor warranty covering all maintenance (corrective and preventive). After warranty, the TSA maintenance service provider performs preventive and corrective maintenance throughout the AIT system's life cycle. All maintenance is performed in accordance with the vendor's procedures. If maintenance is required, a ticket is created and entered into TSA's maintenance call center. All tickets are tracked and trended to ensure proper resolution. Any incident that may result in an accidental exposure must be investigated and reported to the Food and Drug Administration via the manufacturer. In addition, each vendor is required to hold a monthly program management review (PMR). PMRs are used to evaluate the performance of the vendor against all contractual requirements.

In accordance with the Federal Acquisition Regulations, if the vendor fails to meet any of its contractual requirements, TSA will pursue all remedies available to include termination for default.

2b. Please provide any documentation in which scanning equipment has failed or malfunctioned resulting in an actual or potential radiation exposure in excess of this limit.

No such events have occurred with the AIT systems.

3. Does the responsibility of monitoring the safe use of this equipment lie solely with the TSA or is it shared with the FDA? Please describe the monitoring and coordination plan(s) that are in place for sharing information and activities with other federal agencies.

TSA is responsible for establishing policy and procedures to ensure systems operate within safe design parameters; however, TSA works closely with the Food and Drug Administration (FDA) for technical advice. TSA also has an interagency agreement with the U.S. Army Public Health Command (Provisional) to provide radiation safety consultation services and to perform radiation safety surveys and dosimetry studies.

TSA also serves on subcommittees, such as the Guidance for Security Screening of Humans Utilizing Ionizing Radiation Working Group within the Interagency Steering Committee on Radiation Standards and the ANSI/HPS N43.17 Subcommittee. TSA has coordinated with the National Institute for Occupational Safety and Health (NIOSH), Federal Occupational Health (FOH), and the National Institute of Standards and Technology (NIST) for technical reviews and independent evaluations.

Backscatter technology was previously evaluated by the FDA's Center for Devices and Radiological Health (CDRH), NIST, and the Johns Hopkins University Applied Physics Laboratory (APL). All results confirmed that the radiation doses for the individuals being screened, operators, and bystanders were well below the dose limits specified by the American National Standard.

4a. In the event that an inspection of the scanners reveals that the machine is not working optimally, what policies does TSA have to ensure that the machines is shut down from use and fixed promptly?

TSA requirements specify that damaged or malfunctioning security screening systems must not be used, and the TSA service call center must be notified of any damaged or malfunctioning systems.

4b. Are any other agencies notified of machine defects or malfunctioning?

Vendors and TSA notify the FDA of any malfunctions that result in accidental radiation occurrences and safety defects.

- 5. What policies does the TSA have to ensure that any inappropriate dosage that occurs as a result from either human error or malfunctioning of the equipment is promptly reported to the individual(s) who are likely to have received a higher dose, and that the machines are repaired?**

These systems have built-in safety protocols that will terminate x-ray production in the event that any parameter affecting the dose delivered per screening exceeds specification. The ANSI standard requires that the AIT system has indicators, controls, and interlocks to include a key switch and an emergency stop button. These are examples of some of the current components that provide the capability to terminate the emission of radiation other than the operator screening process. Therefore, in the highly unlikely event of a malfunction, these safety protocols would immediately shutdown the unit. TSA would take every available measure to locate and contact all affected individuals.

- 6a. Please provide any documentation of advanced imaging x-ray scanning machines that have failed, malfunctioned or otherwise experienced a problem that resulted in either an actual or potential radiation exposure that was higher than the per scan limit of 25 μ rem, or an unanticipated increase in exposure to those operating or working in proximity to the machines.**

There have been no instances of an actual or potential additional radiation exposure.

- 6b. For each of these instances, please provide estimates for how high the exposure was (or was likely to have been), inspection records or other documentation related to how the problem was identified, resolved, and records of notification for individuals who were (or may have been) exposed.**

There have been no instances of an actual or potential additional radiation exposure.

- 6c. Please also provide, for each of the past 3 years, a) the number of machines that were in operation at the time and b) the number of such machines that were shown, either through inspection or other reports, to have failed, malfunctioned or otherwise experienced a problem that resulted in an actual or potential radiation exposure that was higher than the per scan limit of 25 μ rem, or an unanticipated increase in the exposure to those operating or working in the proximity to the machines.**

There have been no instances of malfunctions that resulted in an unacceptable radiation exposure.

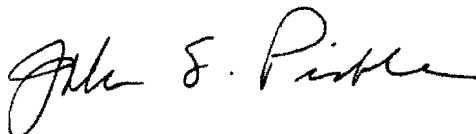
- 7. Does the TSA have dosimeter monitoring plans in place for TSA employees? If so, please provide the details for the monitoring plans and what was found.**

No, TSA does not have a dosimetry program. However, under an interagency agreement, Certified Health Physicists with the U.S. Army Public Health Command (Provisional) perform radiation surveys and area dosimetry studies to measure actual

equipment emissions. These surveys and studies are in addition to the radiation surveys performed as part of the system's preventive maintenance. The results of the area dosimetry study and surveys to date reveal that TSA general-use full body imaging systems dose to system operators and bystanders are in compliance with the ANSI/HPS N43.17 standard, and therefore, do not require personnel dosimeters.

I appreciate that you took the time to share your concerns with us and hope this information is helpful. If I may be of further assistance, please do not hesitate to contact me personally or the Office of Legislative Affairs at (571) 227-2717.

Sincerely yours,

A handwritten signature in black ink, appearing to read "John S. Pistole". The signature is fluid and cursive, with the first name "John" being more prominent.

John S. Pistole
Administrator